

FFC • VMS • CVSRF • VAST-RT

NASA SimLabs News

Newsletter **Volume 8, Issue 1**

[Newsletter Archive](#) <http://www.simlabs.arc.nasa.gov>

[Subscribe](#) **January 2008**

[Unsubscribe](#) **TABLE OF CONTENTS**

[Edit Email](#)

Scrapbook

[In the Media](#)

[Press Releases](#)

Welcome New Subscribers!

If you are receiving this newsletter for the first time, *SimLabs* News is a quarterly publication reviewing current projects at the NASA Ames Simulation Laboratories (SimLabs). NASA [SimLabs](#) is comprised of three unique Flight Simulators, an Air Traffic Control radar simulator and a high fidelity Air Traffic Control Tower simulator. The facilities support government as well as private industry in a wide array of applications. To find out more, read on!

1. [NASA Paper Wins Award](#)
A NASA paper reporting on study of next generation air traffic control was recently acknowledged at an industry conference.
 2. [Crew Exploration Vehicle Handling Qualities Experiment at Ames' Vertical Motion Simulator](#)
SimLabs continues to examine critical issues related to space vehicle handling qualities.
 3. [Electronic Flight Bags for the 747](#)
The Crew Vehicle Systems Research Facility's B747-400 simulator gets Electronic Flight Bags to enhance future research.
 4. [Thinking of doing business with NASA SimLabs?](#)
-

1. NASA Paper Wins Award

"Changes in Roles/Responsibilities of Air Traffic Control Under Precision Taxiing" was the subject of a study in 2007, for which NASA SimLabs [Virtual Airspace Simulation Technology](#) (VAST) project provided a research platform.

A paper reporting the results was given at the 26th Digital Avionics Systems Conference (DASC) held October 21-15, 2007 in Dallas Texas. The authors received two best paper awards: in the Avionics Design track and the Human Factors session. The study was a collaboration between NASA and Optimal Synthesis, Inc.

The [study](#) investigated the changes in roles and responsibilities for tower controllers brought about by the introduction of future automation to achieve precision taxiing. Precision taxiing is a surface concept in which taxi clearances contain precisely timed taxi routes.

The study was conducted in two parts: (1) the current areas of responsibility were used to

identify any issues that arose due to the introduction of increased surface traffic and automation in the tower, and (2) new areas of responsibility in coordination with the automation technology were tested.

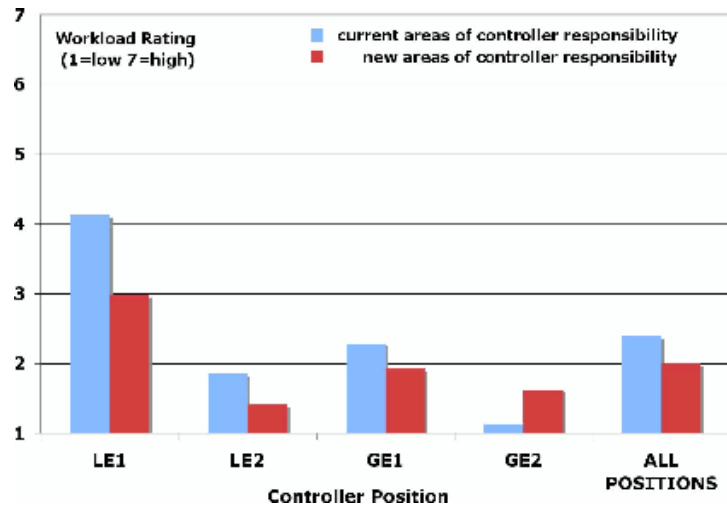


Figure 1: Workload by Phase and Position

The study results showed that the introduction of automation for precision taxiing increases the overall workload for air traffic controllers. However, automation combined with redesigning areas of responsibility can help redistribute workload. As the [Next Generation Air Transportation System](#) moves from planning to implementation, changes in roles of automation and human operators will need to be considered when designing airport traffic control procedures.

[Top of Page](#)

2. Crew Exploration Vehicle Handling Qualities Experiment at Ames' Vertical Motion Simulator

SimLabs continues to examine critical issues related to space vehicle handling qualities in support of NASA's [Exploration Systems Mission Directorate](#) (ESMD). Handling qualities describe the ease and precision with which a pilot can execute a flying task and are affected by numerous issues, including vehicle response, guidance cues, and inceptors.

In this study, researchers focused on the Crew Exploration Vehicle (CEV), with specific emphasis on the relationship of the control system response to control power. Additionally, the effects of camera delay during docking were examined.



Figure 2: Visual database in the VMS, depicting International Space Station and Crew Exploration Vehicle

A [Vertical Motion Simulator](#) (VMS) cab has been customized to resemble the cockpit of a generic space capsule, representative of the CEV. In-house graphics specialists created a visual database of the International Space Station that depicts the new docking mechanism to be utilized by the CEV, known as the “Low Impact Docking System,” or “LIDS” (Figure 2).

Test subjects—including current and former astronauts and NASA test pilots—flew several docking scenarios wherein the vehicle’s translational control system was varied (continuous jets,

pulse jets, proportional, or discrete) and combined with either zero, low, or high cross-axis coupling. Such coupling means that the commanded thrust vector could produce unintended motion effects.

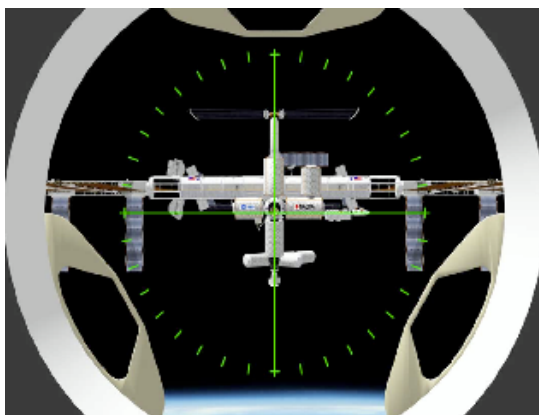


Figure 3: Centerline camera view during docking maneuver showing guidance aid overlay

Exploration Science Mission Directorate, ultimately benefiting the space vehicle program for several generations to come.

[Top of Page](#)

3. Electronic Flight Bags for the 747

Have you ever been in an airport and seen commercial pilots carrying a large rectangular briefcase? For years that is how pilots have had to transport all the company and *FAA* paperwork required to operate their aircraft.

One of the newest innovations to commercial flight decks is the Electronic Flight Bag or EFB. These are electronic devices that provide all the information that was in those leather bags and much more.

The [Crew Vehicle Systems Research Facility](#), in coordination with the Human Factors Research Division at Ames, is procuring *EFBs* for installation in the B747-400 simulator. *EFBs* allow electronic access to checklists, documents, navigational charts and flight performance information including real time weather updates.

Inclusion of the *EFBs* in the B747-400 will ensure the simulator conforms to current airline flight decks for the highest fidelity possible. In addition, *EFBs* will provide a platform for researchers to investigate human interaction with technology and further utilization of the device.

[Top of Page](#)

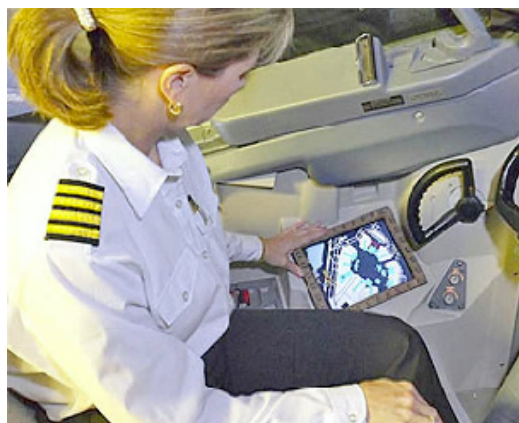


Figure 4: Pilot using Electronic Flight Bag

4. Thinking of Doing Business with NASA SimLabs?

For more information on what we can do for your needs, contact:

Thomas Alderete, Assistant Division Chief for Simulation Facilities
Thomas.S.Alderete@nasa.gov
650.604.3271

Nancy Dorighi, SimLabs Business Development
Nancy.S.Dorighi@nasa.gov
650.604.3258

Bimal Aponso, SimLabs Branch Chief
Bimal.L.Aponso@nasa.gov
650-604-0471

[Top of Page](#)

► Newsletter -- January 2008 - NASA SimLabs - [Available in PDF](#)

► [Acrobat Reader](#) -- download this program to view the PDF form

[Home](#) | [Site Map](#) | [Contact Us](#) | [Latest News](#) | [Links](#) | [About Us](#)
[Gallery](#) | [Library](#) | [Copyright Information](#) | [Privacy Statement](#)

Updated: 01/28/2008 Curator: [Rod David](#) Responsible Official: [Wayne Momii](#)